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A NEW SPECIES OF *DIPLOCENTRUS* (SCORPIONES, DIPLOCENTRIDAE) FROM TEXAS

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ABSTRACT. ***Diplocentrus lindo*** new species, from west Texas, USA, central Nuevo Léon and northern Coahuila, México is described. This description is based on the morphological examination of 199 specimens from nine Texas counties and the Mexican states of Coahuila and Nuevo Léon. This species represents the third *Diplocentrus* known from the state of Texas, has a wider distribution than *D. diablo* and *D. whitei*, and it exhibits a marked range in adult size.

Keywords: *Diplocentrus lindo*, new species, scorpion

The genus *Diplocentrus* Peters 1861 is a poorly understood assemblage of burrowing scorpions known primarily from meso-America reaching its northern range limit in Arizona, New Mexico, and Texas in the United States. Species of *Diplocentrus* reported from Texas include *D. whitei* Gervais 1844, *D. diablo* Stockwell & Nilsson 1987, and *D. keyserlingii* Karsch 1880. *Diplocentrus whitei* is common in the Big Bend region of Texas and adjacent Mexico (Stockwell & Nilsson 1987; Sissom & Fet 2000). *Diplocentrus diablo* is known from the lower Rio Grande Valley from Webb County to Starr County (Stockwell & Nilsson 1987). *Diplocentrus keyserlingii* is found only in Oaxaca, Mexico (Sissom 1994). Records of this species from Texas (Ewing 1928; Gertsch 1939; Rowland & Reddell 1976; Fet et al. 2000) are referable to the new species described below.

METHODS

The measurements and terminology follow those of Stahnke (1970), except for trichobothriotaxy, which follows that of Vachon (1974), metasomal and pedipalpal carination, which follows that of Francke (1978), and hemispermatophore structure, which is modified from Vachon (1952). The measurements reported herein differ from Stahnke (1970) as follows: in measuring the pedipalp chela, the depth is the greatest measurement between the dorsomarginal carina and ventromedian carina, chela width is the narrowest measurement between the digital carina and the internomedian carina, and chela length is measured from the basal-most edge of the external face at the proximal end of the digital or external secondary carina to the distal tip of the fixed finger. All measurements were made to the nearest 0.05 mm using a dissecting microscope equipped with an ocular micrometer.

Paraxial organs were dissected from males using iris scissors and forceps as described by Lamoral (1979). The hemispermatophores were dissected from the surrounding tissues and observed in 70% ethanol.

Letter codes used in the text to indicate the collections from which specimens were obtained are given in the acknowledgments. Specimens from the author's (SAS) collection are listed SAS.

Diplocentrus lindo new species
Figs. 1–9

Diplocentrus whitei Banks 1900: 424 (in part); Pocock 1902: 3, 4 (in part); Rowland & Reddell 1976: 5 (in part) (all misidentified).

Diplocentrus keyserlingi Ewing 1928: 5, 6; Gertsch 1939: 17; Rowland & Reddell 1976: 5 (all misidentified).

Diplocentrus linda Brown & Formanowicz 1996: 41, 42, 44, 45; Kovařík 1998: 130; Fet et al. 2000: 597 (NOMEN NUDUM).

[1]*The views of the author do not represent the views of the Department of the Army or the Department of Defense.*

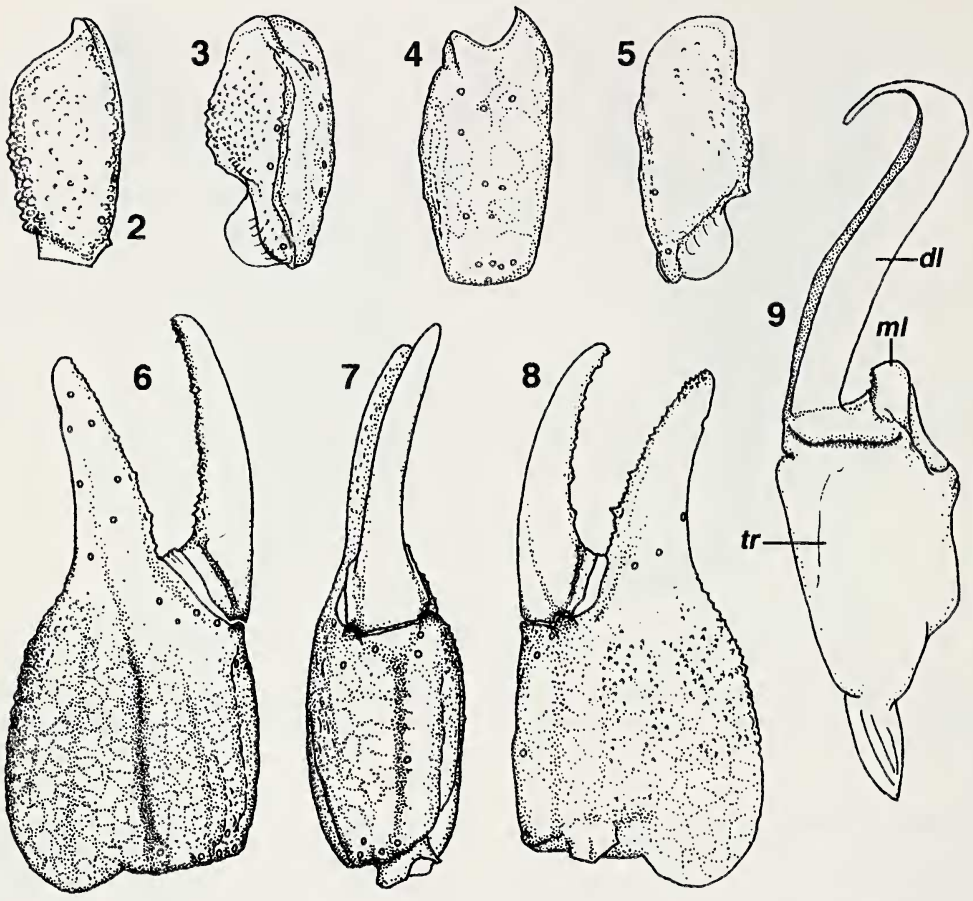
Figure 1.—*Diplocentrus lindo*, adult male paratype (left) from 5 mi. N of Sanderson, Terrell County, Texas, USA, and adult female paratype (right) from 0.5 mi. S of Langtry, Val Verde County, Texas, USA, dorsal aspect.

Type data.—Holotype male from 5 miles north of Sanderson, Terrell County, Texas, 15 June 1974 (Linda Draper, Mont A. Cazier, Oscar F. Francke), deposited in the American Museum of Natural History, New York. Paratypes are listed under specimens examined.

Etymology.—The specific epithet is Spanish for "pretty," and is used as a noun in apposition.

In their paper on reproductive investment in this species, Brown & Formanowicz (1996) used the manuscript name, "*Diplocentrus linda*," believing it to be an available name. Authorship was attributed to Stockwell with no date. The authors did not include a formal description of the species since it was not their intention to describe the species as new. The name thus fails to conform to the requirements of Article 13 of the International Code of Zoological Nomenclature, third edition (International Commission on Zoological Nomenclature 1985) and is therefore a nomen nudum by definition (Fet et al. 2000).

Diagnosis.—*Diplocentrus lindo* is distinguished from its most morphologically similar congener, *D. diablo* Stockwell & Nilsson 1987 from Texas, USA and Tamaulipas, Mexico, by its slightly higher telotarsal spine formula (4/5:5/5-6:6/7:6/7 in *D. lindo*, 4/4:4/5:5/6:5/6 in *D. diablo*) and slightly longer fixed chela finger length (chela length/fixed finger length 2.29–2.50 in males and 2.33–2.59 in females in *D. lindo*, 2.31–2.37 in males and 2.21–2.33 in females in *D. diablo*). *Diplocentrus lindo* and *D. diablo* are also widely allopatric in Texas. It differs from *D. colwelli* Sissom 1986 from central Nuevo Léon, Mexico by its slightly longer pedipalp chelae (chela length/depth 1.92–2.16 in *D. lindo*, 1.78–1.88 in males and 1.86–1.96 in females in *D. colwelli*), weaker reticulations on the pedipalp chelae, slightly lower telotarsal spine formula (4/5:5/5–6:6/7:6/7 in *D. lindo*, 5/5–6:5/6:6/7:6/7 in *D. colwelli*), and moderately dentate lateral margin of median lobe of the hemispermatophore (vestigially dentate in *D. colwelli*). *Diplocentrus lindo* is distinguished from *D. ferrugineus* Fritts & Sissom 1996 (from southern Nuevo Léon) by having a lower telotarsal spine formula (4/5:5/5–6:6/7:6/7 in *D. lindo*, 5/5:6/6:7/7:7/7–8 in *D. ferrugineus*), a higher chela length/depth ratio in males (mean chela length/depth 2.00 in both sexes for *D. lindo*, 2.19–2.28 in *D. ferrugineus* males, 2.02 for



Figures 2–9.—*Diplocentrus lindo*, adult male holotype from 5 miles north of Sanderson, Terrell County, Texas, USA. 2–8. Right pedipalp; 2. Femur, dorsal aspect; 3. Patella, dorsal aspect; 4. Patella, external aspect; 5. Patella, ventral aspect; 6. Chela, external aspect; 7. Chela, ventral aspect; 8. Chela, internal aspect. 9. Right hemispermatophore, lateral aspect. *Abbreviations: dl* = distal lamella, *ml* = median lobe, *tr* = trunk. Not to scale.

females), and is much lighter in color than in *D. lindo*. *Diplocentrus lindo* is easily distinguished from *D. whitei* Gervais 1844 from Texas, USA and Coahuila, Mexico, by its lower telotarsal spine formula (4/5:5/5–6:6/7:6/7 in *D. lindo*, 5–6/7:6/7–8:7/8:7/8 in *D. whitei*), its lower pectinal tooth counts (males 11–15, females 9–13, for *D. lindo*; males 16–20, females 14–18, for *D. whitei*), and shorter, stouter pedipalps (mean chela length/depth 2.00 in both sexes for *D. lindo*, 2.60 in males and 2.17 in females for *D. whitei*). *Diplocentrus lindo* is generally darker in color than *D. spitzeri* Stahnke 1970 from Arizona, USA and Sonora, Mexico, and *D. peloncillensis* Francke 1975 from Arizona and New Mexico, USA. *Diplocentrus lindo* also has lower telotarsal spine formulas, especially on telotarsi I and II (4/5:5/5–6:6/7:6/7 in *D. lindo*, 6/6:6/6–7:7/7:7/7 in *D. spitzeri*, 5/6:6/6–7:6/7:6/7 in *D. peloncillensis*).

Description.—*Male:* Color brown with variable dark brown marbling. Carapace smooth to minutely granular interspersed with a few larger granules anteriorly and laterally; prosomal venter lustrous, punctate; pectinal tooth count 11 to 15 (mode 14). Mesosomal tergites moderately granular; tergite VII acarinate, moderately bilobate, coarsely granular. Sternites lustrous; sternite VII with submedian and lateral carinae weak, smooth on posterior one-half to one-fourth.

Metasoma moderately hirsute; intercarinal spaces lustrous, finely punctate. Dorsolateral

carinae weak, vestigially granulose on segments I-IV. Lateral supramedian carinae moderate, granulose on segments I-IV. Lateral inframedian carinae moderate on segment I; weak on II and III; vestigial on IV; granulose on all segments. Ventrolateral carinae moderate, granulose on segments I-III; weak, granulose on IV. Ventral submedian carinae moderate, vestigially granulose on segments I-II; weak, vestigially granulose on III; obsolete on IV. Metasomal segment V dorsolateral carinae weak, smooth; lateromedian carinae weak, granular; ventrolateral, ventromedian and ventral transverse carinae moderate with a single row of large tubercles; anal subterminal carina moderate, tuberculate; anal terminal carina weak, crenulate. Telson smooth with a few tubercles on ventral anterior margin; moderately setose.

Pedipalps robust, orthobothriotaxic C (Vachon 1974, figs. 11–17). Femur with dorsal face sparsely granular; internal face with moderately dense tubercles; ventral and external faces weakly granular to smooth; dorsointernal carina moderate, granulose; dorsoexternal carina moderate with large granules proximally, obsolete distally; ventroexternal carina obsolete; ventrointernal carina weak, irregularly tuberculate. Patella with ventral and external faces weakly to vestigially reticulate; internal face moderately granular; basal tubercle moderately strong, rounded, moderately granular; dorsomedian carina moderate, smooth; ventroexternal carina moderate, smooth; ventrointernal carina weak to moderate, tuberculate; other carinae obsolete. Chela with dorsal and external faces moderately reticulate; internal and ventral faces weakly reticulate; dorsomarginal carina weak to moderate, granular; dorsal secondary carina vestigial; digital carina strong; external secondary carinae weak; ventroexternal carina obsolete; ventromedian carina strong; ventrointernal carina moderate; three internal carinae weak to vestigial, granular. Legs typical for genus. External faces with weak to moderately dense granulation. Modal telotarsal spine formula 4/5:5/5–6:6/7:6/7. Distal lamella of hemispermatophore not noticeably elongate. Lateral external margin of median lobe moderately dentate (fig. 18). Measurements of holotype male (L = length, W = width, D = depth). Total L, 43.30. Carapace L, 5.65. Mesosoma L, 14.00. Metasoma L, 23.65. Metasomal segments L/W/D: I, 2.90/3.10/2.30; II, 3.20/2.70/2.20; III, 3.50/2.60/2.15; IV, 4.10/2.55/2.10; V, 5.30/2.05/1.90. Telson: L, 4.65; vesicle L/W/D, 3.65/2.10/1.75; aculeus L, 1.00. Chelicera: chela L/W, 2.85/1.20; fixed finger L, 1.05; movable finger L, 1.70. Pedipalp: femur L/W/D, 4.50/2.05/1.70; patella L/W/D, 4.65/2.25/2.50; chela L/W/D, 9.90/2.80/4.80; fixed finger L, 4.30; movable finger L, 6.10.

Female: Similar to male except as follows. Tergites sparsely granular to smooth; pedipalpal and metasomal carinae weaker, reticulate pattern vestigial to obsolete; pectinal tooth counts 9 to 13 (mode 10). Sexes are morphometrically similar; carapace wider than long; pedipalp chela length/depth ratio 1.9–2.2; metasomal segment I wider than long; remaining segments longer than wide.

Measurements of a paratype female from 19 mi. S of Sheffield, Terrell County, Texas: Total L, 38.55. Carapace L, 5.20. Mesosoma L, 13.95. Metasoma L, 19.40. Metasomal segments L/W/D: I, 2.35/2.90/2.05; II, 2.60/2.50/2.10; III, 2.85/2.40/2.05; IV, 3.25/2.25/1.90; V, 4.25/1.95/1.85. Telson: L, 4.10; vesicle L/W/D, 3.20/2.15/1.70; aculeus L, 0.90. Chelicera: chela L/W, 2.65/1.30; fixed finger L, 1.00; movable finger L, 1.60. Pedipalp: femur L/W/D, 3.75/1.80/1.55; patella L/W/D, 4.15/1.90/2.05; chela L/W/D, 8.55/2.60/4.25; fixed finger L, 3.45; movable finger L, 5.05.

Variation.—*Diplocentrus lindo* displays a marked difference in overall size across its geographic range. In higher, cooler areas, such as the Davis Mountains of Texas, adults may be nearly half the size of individuals from lower, warmer localities. It was initially suspected that the two size classes represented different species. However, except for the difference in size, we have found no discernible variation between the groups. We compared the ranges, means, and standard deviations of six taxonomically important morphometric ratios from 20 small adult males and 20 large adult males and found no significant differences between the two groups, despite the difference in overall size. We subsequently pooled the data for all males. The ranges, means, and standard deviations of these six taxonomically important morphometric ratios from 40 adult males and 20 adult females are as follows: pedipalp chela length/depth: males 1.92–2.16, 2.00, 0.05; females 1.92–2.13, 2.00, 0.06. Pedipalp chela length/carapace

length: males 1.63–1.80, 1.70, 0.04; females 1.53–1.68, 1.62, 0.04. Pedipalp chela length/pedipalp fixed finger length: males 2.29–2.50, 2.40, 0.06; females 2.33–2.59, 2.41, 0.07. Carapace length/pedipalp fixed finger length: males 1.33–1.53, 1.41, 0.06; females 1.39–1.69, 1.48, 0.08. Pedipalp fixed finger length/pedipalp femur length: males 0.85–0.98, 0.90, 0.03; females 0.84–1.00, 0.94, 0.04. Pedipalp fixed finger length/metasomal segment V length: males 0.68–0.81, 0.76, 0.04; females 0.74–0.92, 0.85, 0.04.

Specimens (n = 199) varied in pectinal tooth counts as follows: in males, one comb had 11 teeth, 11 combs had 12 teeth, 78 combs had 13 teeth, 153 combs had 14 teeth, 27 combs had 15 teeth, and three combs were damaged or missing; in females, one comb had nine teeth, 70 combs had ten teeth, 37 combs had 11 teeth, 13 combs had 12 teeth, one comb had 13 teeth, and three combs were damaged or missing.

As in all *Diplocentrus* species, there is variation in telotarsal spine counts of *D. lindo*. We report the telotarsal spine counts from 183 specimens. Spine counts from both the right and left legs are reported for each specimen. For each leg, we report the number of spines in the row followed by the number of legs exhibiting that count (in parentheses). Missing or damaged telotarsal rows are indicated by X. Leg I: prolateral row - 2 (2), 3 (7), 4 (327), 5 (25), X (5); retrolateral row - 3 (4), 4 (42), 5 (312), 6 (2), 7 (1), X (5). Leg II: prolateral row - 3 (1), 4 (10), 5 (344), 6 (4), 7 (1), X (6); retrolateral row - 2 (1), 3 (1), 4 (10), 5 (121), 6 (226), X (7). Leg III: prolateral row - 4 (2), 5 (48), 6 (303), 7 (10), 10 (1), X (2); retrolateral row - 5 (1), 6 (53), 7 (303), 8 (6), 11 (1), X (2). Leg IV: prolateral row - 4 (1), 5 (29), 6 (308), 7 (28), X (3); retrolateral row - 4 (1), 5 (1), 6 (53), 7 (290), 8 (18), X (3).

Distribution.—This species is widely distributed throughout west Texas and is recorded from Culberson, Reeves, Jeff Davis, Pecos, Upton, Crockett, Brewster, Terrell, and Val Verde counties. This species is also known from the states of Coahuila and Nuevo Léon in Mexico. *Diplocentrus lindo* is usually found on rocky slopes. Individuals may be found in burrows beneath large stones and other surface objects.

Specimens examined.—**USA:** *TEXAS: Brewster County*, Alpine, 5 June 1942 (E.S. Ross), 3 males 1 female (CAS); Alpine, 16 July 1949 (B.H. Warnock), 1 male (CAS); Alpine, 23 April 1964 (J. Scudday), 1 male (CAS); Alpine, 27 April 1964 (C. Babcock), 1 female (CAS); Alpine, 26 November 1964 (J. Scudday), 1 female (CAS); Alpine, 14 June 1965 (J. Scudday), 1 female (CAS); 5 mi. S Alpine, 12 July 1955 (S.A. Minton), 1 male (CAS); 5.5 mi. S Alpine, 19 August 1968 (S.C. Williams, M.M. Bentzien, J. Bigelow), 2 females (CAS); 6 mi. S of Alpine, 30 June 1965 (M.H. Muma), 1 female (CAS); 6 mi. S of Alpine, 27 July 1978 (O.F. Francke, J.V. Moody), 4 females (AMNH); 8 mi. S Alpine, Hwy. 118, 25 September 1964 (J. Scudday), 2 females (CAS); 8 mi. S Alpine, 26 November 1964 (J. Scudday), 7 females (CAS); 10–12 mi. S Alpine, 4/11 October 1964 (J. Scudday), 5 males 2 females 2 immatures (CAS); 10 mi. SW of Alpine, 11 August 1966 (A. Jung, K. Hom), 1 male (AMNH); 10 mi. SW of Alpine, 11 August 1966 (T. Briggs, A. Jung, K. Hom), 6 females (CAS); 12 mi. S Alpine, Hwy. 118, 5/10 October 1965 (Rogers, Freels), 2 females (CAS); 22 mi. S Alpine, Babcock Ranch, 25/26 April 1964 (S. Sikes), 2 females (CAS); 22 mi. S Alpine, Babcock Ranch, 27 April 1964 (C.E. Babcock), 1 male 2 females (CAS); 23 mi. S Alpine, Babcock Ranch, 15 March 1964 (C.E. Babcock), 1 male 2 females (CAS); 25 mi. S Alpine nr. Calamity Cr., 15 April 1964 (T. Watson), 1 female (CAS); 5 mi. E Lajitas, 1 August 1986 (R.W. Manning, R. Hollander), 1 male (WDS); Paisano (Biological Expeditions, U. S. Dept. of Agriculture), 7 July 1890 (W. Lloyd), 1 female (USNM); Black Gap Wildlife Area, 30 July 1955 (W.G. Degenhardt), 1 male (AMNH); Black Gap Refuge, Norton Tank, 30 August 1960 (W.G. Degenhardt), 1 female (CAS); 41 mi. N Panther Jct., Hwy. 385, 17 August 1968 (S.C. Williams, M.M. Bentzien, J. Bigelow), 3 males 4 females (CAS); Big Bend N.P., 1959 (H.L. Stahnke), 1 male (CAS); Big Bend N.P., Grapevine Hills, 17 August 1968 (M.A. Cazier, J. Bigelow), 1 male (AMNH); Big Bend N.P., 13. 2 mi. SE Panther Jct., 17 August 1968 (S.C. Williams, M.M. Bentzien), 2 males (CAS); Big Bend N.P., Kibbe Spr., 24 July 1956 (H.L. Stahnke), 2 females (CAS); Big Bend N.P., Oak Spr., 30 July 1956 (H.L. Stahnke), 1 female (CAS); Big Bend N.P., Window Trail, 19 July 1956 (R. Curbow), 1 female (CAS); Big Bend N.P., Chisos Mts., no date (no collector), 2 females (AMNH); Big Bend N.P., Chisos Basin, CCC Camp, 25–30 July 1937 (Necker), 1 female (AMNH); Big Bend N.P., Laguna, Mt. Emory, 12 April 1937 (no collector), 1 female (AMNH); Big Bend N.P., Chisos Mts., foot of Emery Mts., 6 July 1938 (E. Shaw, J. & R. Schmidt), 1 female (CAS); Big Bend N.P., Chisos Mts., foot of Mt. Emery, 6 July 1938 (B.H. & E. Shaw), 1 male 1 female (CAS); Big Bend N.P., Chisos Mts., 28 May 1952

(M.A. Cazier, W. J. Gertsch, R. Schrammel), 2 females (AMNH); Big Bend N.P., Chisos Mts., Green Gulch, 5 April 1955 (S.A. Minton), Big Bend N.P., Chisos Mts. Basin, 1 July 1956 (E. Steele), 1 male (CAS); Big Bend N.P., Chisos Mts. Upper Basin, 30 July 1955 (H.L. Stahnke), 1 male (CAS); Big Bend N.P., Upper Basin, 21/25 July 1956 (H.L. Stahnke), 1 male 1 female (CAS); Big Bend N.P., Chisos Basin, 5 August 1962 (C.A. Triplehorn), 1 male (CAS); Big Bend N.P., Chisos Basin, 26 May 1965 (K.W. Haller), 2 males (AMNH); Big Bend N.P., Chisos Basin, 27 August 1965 (C. Parrish), 1 male 2 females (CAS); Big Bend N.P., Chisos Basin Pass, 28 July 1978 (O.F. Francke, J.V. Moody), 1 female (AMNH); Big Bend N.P., Chisos Basin, 29 July 1978 (O.F. Francke, J.V. Moody), 1 female (AMNH); Big Bend N.P., Chisos Basin, 9 August 1979 (O.F. Francke), 1 female (AMNH); Big Bend N.P., Juniper Canyon, July 1921 (no collector), 1 male 5 females (AMNH); Big Bend N.P., Pine Canyon, 10 August 1979 (Francke, Moody, Merickel), 1 male 1 female (AMNH); Big Bend N.P., Pine Canyon, 10 August 1979 (Francke, Moody, Merickle), 1 female with young (AMNH); Big Bend N.P., Boquillas Canyon, 27 January 1973 (C. McConnell), 1 female (AMNH). *Crockett County:* 11 mi. N of Iraan, 29 September 1985 (S.A. Stockwell), 1 male 1 female (SAS); 10 mi. N of Iraan, 15 September 1985 (S.A. Stockwell), 6 females (SAS); 5 mi. N, 4 mi. W Iraan, 30 June 1986 (Manning, Hollander), 2 males (WDS); 15 mi. E of Iraan, 14 September 1985 (S.A. Stockwell), 1 male (SAS); 45 mi. NW of Ozona, 21 March 1978 (O.F. Francke, T.B. Hall, J.V. Moody), 2 females (AMNH). *Culberson County:* 8 January 1981 (G. Zolnerowich), 2 females (MWSU); 4 mi. NNE of Kent, 14 March 1981 (N.V. Horner), 2 males 1 female (MWSU); 6 mi. N of Kent, 20 March 1985 (no collector), 1 female (MWSU); 9 mi. N of Kent, 19 April 1980 (W.W. Dalquest), 1 female (MWSU); 31.8 mi. NE of Van Horn, 2 July 1978 (Francke, Hall, Moody), 1 male (AMNH). *Jeff Davis County:* 15 April 1968 (F. Horne), 2 males 6 females (CAS); Davis Mts., Fort Davis Quad., Cottonwood Springs, 27 May 1916 (F.M. Gaige), 1 female (UMMZ); Davis Mts., Fort Davis Quad., Cottonwood Springs, 5 June 1916 (F.M. Gaige), 1 female (UMMZ); Davis Mts., Fort Davis Quad., Cottonwood Springs, 7 June 1916 (F.M. Gaige), 1 male 4 females (UMMZ); Davis Mts., Fort Davis Quad., 12 June 1916 (F.M Gaige), 1 female (UMMZ); Davis Mts., Fort Davis Quad., Two Spring Canyon, 28 June 1916 (F.M. Gaige), 1 male 1 female (UMMZ); Davis Mts., Fort Davis Quad., 6 July 1916 (F.M. Gaige), 1 male (UMMZ); Davis Mts., Fort Davis Quad., Maple Canyon, 8 July 1916 (F.M. Gaige), 5 females 2 immatures (UMMZ); Davis Mts., Fort Davis Quad., Cherry Canyon, 9 July 1916 (F.M. Gaige), 1 female (UMMZ); Davis Mts., Fort Davis Quad., 14 July 1916 (F.M. Gaige), 1 female (UMMZ); Davis Mts., 9 May 1951 (O. Bryant), 1 male (CAS); Davis Mts. State Park, no date (O.F. Francke, J.V. Moody), 1 male (AMNH); Davis Mts. State Park, 5 mi. N Ft. Davis, 26 April 1964 (C. Babcock), 1 male (CAS); Davis Mts. State Park, 20 June 1970 (M.A. Cazier, L. Draper, O.F. Francke), 46 males 7 females (AMNH); Davis Mts. State Park, Limpia Canyon Campground, 5 June 1974 (L. Draper, M.A. Cazier, O.F. Francke), 37 males 10 females (AMNH); Davis Mts. State Park, 9 June 1978 (O.F. Francke), 3 males (WDS); Davis Mts. State Park, 1 March 1985 (S.A. Stockwell, J.M. Steele), 1 male 1 females (SAS); 2 mi. W of Fort Davis, 22 April 1970 (A. Schoenhor, W.L. Minckley), 1 male 2 females (AMNH); 4 mi. W of Fort Davis, 6 June 1978 (O.F. Francke) (WDS); 9 mi. N of Fort Davis, 22 June 1970 (W. Seifert), 1 male (MWSU); 8 mi. E of McDonald Observatory, no date (N.V. Horner), 1 male (MWSU); 20 km S of Toyahvale, 13 March 1977 (D. Holub, K. Douglas), 1 male, 1 female (MWSU). *Pecos County:* 10 mi. N of Ft. Stockton on Will Banks Ranch, 27 December 1966 (B. Winokur), 4 females (CAS); 30 mi. S of Ft. Stockton, Glass Mts., 7 June 1974 (L. Draper, M.A. Cazier, O.F. Francke), 2 males (AMNH); Sheffield, Pecos River Bluff, 7 July 1968 (M.H. and E.U. Muma), 1 female with three first instar young (CAS); 4 mi. E of Sheffield, Pecos River, 7 June 1974 (M.A. Cazier, L. Draper, O.F. Francke), 8 males 7 females (AMNH); 15 mi. N of Sanderson, 3 June 1970 (W. Seifert), 1 female (MWSU); 20 mi. W of Sanderson, 2 September 1983 (W.D. & J.C. Sissom), 1 female (WDS). *Reeves County:* 22 mi. SW of Toyah, 3 October 1983 (D. Foster), 1 male (WDS); Balmorhea State Park, 26 August 1971 (K., M., and M.A. Cazier), 2 males 1 female (AMNH); Balmorhea State Park, June 1979 (Moody, Merickel), 2 females (AMNH). *Terrell County:* Sheffield, Pecos R. Bluff, 7 July 1968 (M.H. and E.U. Muma), 1 female (CAS); 19 mi. S of Sheffield, Blackstone Ranch, 16 May 1958 (W.H. McAlister), 1 female (TMM), 19 mi. S of Sheffield, 8 June 1974 (O.F. Francke), 6 immatures (AMNH); 19 mi. S of Sheffield, 15 June 1974 (L. Draper, M.A. Cazier, O.F. Francke), 2 males 2 females (AMNH); Pecos River and Independence Creek, Chandler Ranch, 27–28 June 1968 (W.L. Minckley), 2 males (AMNH); 1 mi. S Pecos County line, 4 June 1986 (Manning, Hollander), 1 male 1 juvenile (WDS); 6.3 mi. NW Sanderson, 20 November 1960 (D. Campbell, H. Harris), 1 female (AMNH); 5 mi. N of Sanderson, 8 June 1974 (L. Draper, M.A. Cazier, O.F. Francke), 3 males (AMNH); 5 mi N of Sanderson, 15 June 1974 (L. Draper, M.A. Cazier, O.F. Francke), 10 males (AMNH); 4 mi. E of Dryden, 4 September 1939 (D. and S. Mulaik), 3 females (AMNH); 21 mi. N of Dryden, 2 July 1970 (W. Seifert), 1 male (MWSU); *Upton County*, 3 mi.

S, 5 mi. E McCamey, 7 June 1986 (Manning, Hollander), 2 males 1 juvenile (WDS). *Val Verde* County: 20 mi S of Juno, 2 May 1970 (W. Seifert), 2 females (MWSU); 21 mi. N of Comstock, 14 September 1985 (S.A. Stockwell), 2 males 1 female (SAS); 19 mi. N of Comstock, 14 April 1973 (J. Cooke), 1 male 2 females (AMNH); 15 mi. N Comstock, 22 June 1971 (no collector), 1 male 2 females (CAS); 10 mi. N Comstock, 22 June 1971 (no collector), 1 male 2 females (CAS); 7 mi. N Comstock, 12 July 1986 (Manning, Hollander), 1 female (WDS); 0.5 mi. NW of Comstock, 8 May 1968 (T. Walker), 1 female (AMNH); 10 mi. W of Comstock, Pecos River, 2 September 1983 (W.D. & J.C. Sissom), 1 male (WDS); 11 mi. W of Comstock, 28 August 1970 (F. & J.M. Davidson), 2 males (CAS); 21 mi. N of Langtry, 14 April 1973 (T.R. Mollhagen), 1 female (AMNH); 5 mi. N of Langtry, 15 April 1973 (J. Cooke), 1 male 1 female (AMNH); 3 mi. N of Langtry, 3 November 1984 (J. Reddell, M. Reyes), 1 female (TMM), Langtry, 26 June 1971 (E. Tombellin), 1 female (AMNH); 0.5 mi. S of Langtry, 14 June 1974 (L. Draper, M.A. Cazier, O.F. Francke), 5 males 7 females (AMNH); 2 mi. SSE Langtry, 7 June 1974 (L. Draper, M.A. Cazier, O.F. Francke), 1 female (AMNH); 3 mi. W of Langtry, Rattlesnake Canyon, 30 April 1983 (F.L. Rose), 1 female with young (AMNH). **MEXICO:** *COAHUILA:* 10 km SE Musquiz, 24 June 65 (J. Reddell), 1 female (TMM). *NUEVO LÉON:* 4 mi. S of Bustamante, 26 March 1964 (B. Russell), 1 male (AMNH); 9 mi. E of Mex. 57 on Galeana Road, March 1968 (T. Walker), 1 male (AMNH); 2 mi. NE of Villa de Garcia, 19 August 1984 (Sissom, Myers, Born), 1 male (WDS).

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